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DATE: March 28, 2002

YOUR REF: U.S. application Serial No. 09/139,386

OUR DOCKET NO: 24736-2060

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As you requested, attached are the claims as presently pending in U.S. application Serial No. 08/467,208.

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Pending claims in U.S. application Serial No. 08/467,208:

35. (Amended five times) The solid support of claim 36,

wherein:

the mass-modification is a modification of a sugar moiety, base moiety or phosphate backbone; and

is a modification of a nucleobase or bases in the chain or in the primer, to the phosphate backbone in the chain or in the primer or to a 2'-position of the nucleoside or nucleosides in the chain or in the primer.

36. (Amended four times) A solid support, comprising a linking functionality, L', linked to a nucleic acid primer via a linking group, L, of the primer to form a linkage L-L', wherein:

the interaction between L and L' is selectively cleavable enzymatically, chemically or physically; the primer, which is a primer for enzymatic synthesis of nucleic acids, comprises a mass-modifying functionality (M) that introduces defined mass increments into the oligonucleotide molecule for mass-resolution by mass spectrometry, that is not a radiolabel or a fluorescent label, and that is linked directly to the primer, or the primer comprises an initiated nucleic acid chain that contains a nucleotide with a mass-modifying functionality (M); and

the linkage L-L', is selected from the group consisting of a photocleavable bond, a bond based on a strong electrostatic interaction, a tritylether bond, a β-benzoylpropionyl group and a levulinyl group.

37. (Amended) A microtiter plate adapted with a functionalized membrane, comprising a solid support and a reversibly linked nucleic acid primer in each well.

69. The solid support according to claim 36, wherein the photocleavable bond of linkage L-L', is selected from the group consisting of a charge transfer complex and a moiety, which forms a stable organic radical upon cleavage.

74. (Amended four times) A solid support having a linking functionality, L', linked to a primer via a linking group, L, forming a photocleavable bond L-L', wherein the photocleavable bond is selected to be selectively cleaved by ultraviolet laser energy.

75. A solid support of claim 35, wherein the mass modifying functionality (M) is attached to a heterocyclic base of at least one nucleotide, thereby forming a heterocyclic base-modified nucleotide.

76. (Twice amended) A solid support of claim 36,

wherein the mass modifying functionality (M) is attached to a heterocyclic base of at least one nucleotide, thereby forming a heterocyclic base-modified nucleotide; and

the heterocyclic base-modified nucleotide is selected from the group consisting of a cytosine nucleotide modified at C-5, a thymine nucleotide modified at C-5, a thymine nucleotide modified at the C-5 methyl group, a uracil nucleotide modified at C-5, an adenine nucleotide modified at C-8, a c^7 -deazaadinine nucleotide modified at C-8, a c^7 -deazaadinine nucleotide modified at C-7, a guanine nucleotide modified at C-8, a c^7 -deazaguanine nucleotide

modified at C-8, a c^7 -deazaguanine nucleotid modified at C-7, a hypoxanthine nucleotide modified at C-8, a c^7 -deazahypoxanthine nucleotide modified at C-7, and a c^7 -deazahypoxanthine nucleotide modified at C-8.

77. (Twice amended) A solid support of claim 35, wherein the mass-modifying functionality (M) is attached to one or more phosphorous atoms of an internucleotidic linkage of the primer or of the primer initiated nucleic acid chain.

78. (Amended) A solid support of claim 35, wherein the mass modifying functionality (M) is attached to one or more sugar moieties of nucleotides of the primer or primer initiated nucleic acid chain at least one sugar position selected from the group consisting of an internal C-2' position, an external C-2' position, and an external C-5' position.

79. (Amended) A solid support of claim 35, wherein the mass-modifying functionality (M) is attached to the sugar moiety of a 5' terminal nucleotide and wherein the mass-modifying function (M) is the linking group (L).

80. (Amended) A solid support of claim 35, comprising a set of base-specifically terminated fragments that comprise a mass modifying functionality, wherein the mass modifying functionality (M) is attached to the set of base-specifically terminated fragments subsequent to enzymatic synthesis of the base-specifically terminated fragments and prior to determining the molecular weight values for the nested fragments by mass spectrometry.

81. A solid support of claim 35, which is selected from the group consisting of: a bead, capillary, polymeric sheet, glass plate, and metal surface.

82. (Amended) A solid support of claim 81, wherein the bead is selected from the group consisting of: a magnetic bead, a cellulose bead, polystyrene bead, Controlled Pore Glass (CPG) bead, silica-gel bead, a cross-linked dextran bead and an agarose bead.

83. ((Twice amended) A solid support of claim 36,

wherein the solid support is selected from the group consisting of: a bead, capillary, polymeric sheet, glass plate, and metal surface.

84. (Twice amended) A solid support of claim 36, wherein:

the mass-modification is a modification of a sugar moiety, base moiety or phosphate backbone; and

is a modification of a nucleobase or bases in the chain or in the primer, to the phosphate backbone in the chain or in the primer or to a 2'-position of the nucleoside or nucleosides in the chain or in the primer.

85. (Amended) A solid support, comprising a linking functionality, L', reversibly linked to a nucleic acid primer via a linking group, L, of the primer to form a linkage L-L', wherein:

the interaction between L and L' is selectively cleavable enzymatically, chemically or physically;

the primer, which is for enzymatic synthesis of nucleic acid molecules, comprises a mass-modifying functionality (M) that introduces defined mass increments into the oligonucleotide molecule for mass-resolution by mass spectrometry, that is not a radiolabel and that is linked directly to the primer, or the primer comprises an initiated nucleic acid chain that contains a nucleotide

with a mass-modifying functionality (M); and

the linkage L-L', is a photocleavable bond or a bond based on a strong electrostatic interaction.

86. (New) A solid support, comprising a linking functionality, L', reversibly linked to a nucleic acid primer via a linking group, L, of the primer to form a linkage L-L', wherein:

the interaction between L and L' is cleavable enzymatically, chemically or physically; and the primer contains a mass-modifying functionality (M) that is not a radiolabel or a fluorescent label, or the primer comprises an initiated nucleic acid chain that contains a nucleoside triphosphate with a mass-modifying functionality (M) that is not a radiolabel or a fluorescent label.